Notebook, N-06-11-18

This notebook covers the periods April-October 1907 and February-April 1920. All entries are by Edison. The book contains notes and drawings regarding projects to be undertaken and hypotheses to be tested, along with other theoretical speculation pertaining to electricity, physics, and cosmology. Included are entries relating to x-rays and "xyz rays," the electromotograph, storage batteries, and incandescent lamps. There is scattered material dealing with improvements to the phonograph and kinetoscope, including a one-page entry about a proposed "kinetophonograph," as well as a brief notation detailing a high-voltage direct current dynamo. The book appears to have been used primarily at Fort Myers, Florida. At the end of the book, Edison's youngest son, Theodore, signed his name in November 1906. The front cover is labeled "Ideas Theory." The book contains 408 numbered pages; many pages are blank.

April 5 1907

Disassociation Theory of Electrolytes

Let us assume that the above theory is incorrect, the true explanation is that conduction is due to the destruction of a portion of the limiting stress capacity of the electrolyte and providing molecules which for conducting are structurally ionic, or non polarizable.

Take for instance CP water, it has a stress limit, the whole of it because the exterior surface of the molecule has one portion a combustable of high potential, and another part non combustable or low potential

Now when a wave attempts to pass thru it, the molecules polarize and position themselves to prevent the passage of the current except the first rush which supplies energy of positioning formation of the stress, which is ordinarily called polyn of the electrodes.

If we now put K_2O in the water there is hydration, or combination of the H_2O with the K_2O. to form a new molecule,

Thus K_2O one water hydrate

3 water hydrate

This new molecule has all the high potential or combustable atoms on the exterior while the zero potential or non-combustables are at the center

Thus we have a molecule, unstressible becomes incapable of being positioned by the wave and can conduct like a metal, the equivalent to the ions of Arhenius

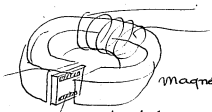
The end reactions with the Nickel Iron Accumulator is transfering O from one pole to the other = I do not mean to say that the O actually travels from the Fe across the liquid to the Nickel but the wave passes over the bridge of conducting ions, and the actions are local. at each pole, just as if a metal rod reached across the liquid
The non ionic water however passes O from pole to pole by molecular exchanges No weighable matter shuttles across. otherwise a battery one million miles between the electrodes would actually require projection over this space of weighable matter which is absurd.

Migration of the molecules is a secondary phenomenon, slowly taking place.

No salt dissolved in water will permit the resulting liquid to conduct without the salt combines with water to form a hydrate, and proms a

structural ion, the more perfect the ionic structure the better will the solution conduct any asymetry in the outer shell of the molecule and not wholly combustable will result in slight positioning, formation of limiting stresses, or by working of mass action very few molecules are hydrated to an ionic state,

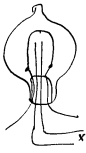
The more dilute the water solution is the greater the mass action compelling hydrate, hence the greater proportionate conductivity



Perpindicular cell between poles heat and disturb resistance electrostatic lines they want to form but must work against repellant force of the Magnetic Force plating Dots etc

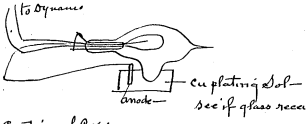
Copper wire volute

Try alternating Cts



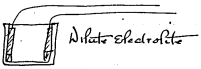
Edison effect

see if battery current pass across X.



Coating of Copper

Try a group of test cells ½ wash with plunger fitted as close as practicable



projection of ion should hit N or P pole & give a ray— Use celluloid cell cathode & anode forming part of the cell.
Very Dilute Solutions, Try Al + other metals & of ions—

Try stunts with protoxide of iron & Silica (Silicate ferrous) also Manganous Silicate — in helix & other conditions

Potassium Oxide reduced by Hydrogen at low heat whereas Li_2O not reduced by H or CO,

Heat of formation Li_2O	140 000	$+ H_2O$ 13000	Hydrate 26000
Na_2O	105 000	25000	55000
K_2O	97 000	42000	67000

Solubility Li_2CO_3 100 pts H_2O dissolve at

0° C	1.539
10° C	1 406
20	1 329
50	1,181

Try crater arc light carbon Bort mixed with all kinds metals metaloids & other Compounds not acting to destroy to see if can be changed to Carbonado, Did goes to Graphite —

Self frothing of KOH is stopped by adding Lithia —

Make emulsion of photo silver salts in collodion containing some reducing agent equally as strong as gelatin but not on the collodion + coat film stick + print from Kerreto negatives to get film wont flake off –

Historical Survey of Crystallo Lumineccence
Etc 800 substances show 30% give light when crystals are crushed.
Zeit physical chem – 1905 Vol 53. 1.

Try painting over dry photo plate Oxalate Lithia Balmain, etc To render slow negatives as sensitive as fast ones, so both will get same chance –
Try Quartz lenses,

Ask Bragher Pittsburgh for Catalogue,

iron coil around see if alternations will change friction when clip metals + o-bottomen ones

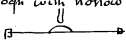
Historical survey of Crystallo luminescience of 800 substances 30% show light when crystals are crushed.

Zeit Physical Chem 1905 Vol 53 p 1 get.

Balmain Luminous paint also oxalate Lithia on dry plate negative permit more rapid exposure

Atlantic Cable or at least South Amer Cable has resistance 33 ohms per mile 1/3rd Microfarad Capacity.

Diaphm of Phonogh with hollow Ball 1/4 Dia or a section

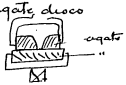


facing a rounded point and vibrated with a piezo, being charged statically see if get a continuous current

Alloys all kinds metals with Mn Cr V to get Magnetic alloys

Mn + Thorium make magnetic alloy

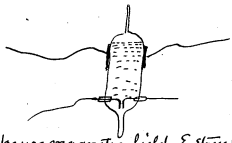
Get pair of 2" agate discs



Set up like a paint mill & grind wet under water, Various precipitates like Ca + Ba Sulphates to see if long grinding dont Enormously increase solubility

---

Na K Li Ca Ba Sr in tubes, dif wires, & open only by a capillary tube very fine to let gas out, Keep a long time under electrolysis to get nature of the deposit, look out for breaking down of the molecules.



also use magnetic field, E stress field Light from Hg + Carbon arc, X Ray Rad — 6 tubes put up Rack for continuous work — Long tube to hold 200 CC —

X Ray arc etc

Na K Li metals heated to get vapor

long continued action,

In Aluminium Rectifiers - All sol salts of Alumina - Formate Al Cyanates K Li NH4 Fluoborates Alkalis Fluorides of Alkalis

Probably Current passing thru a cell. twists the molecules like wire around iron. Try of strong Current in small cell shows any disposition to attract any metal or Compound Use single fibre silk allunder bell jar - put current on & off.

See if water can be made to conduct by use of any electrode element or alloy Sulfide etc also use with each trial E stress Mag arcd X ray etc

To test H_2SO_4 for series of hydrates
Test diaelectric Cap. between glass plate coef.
also viscosity, capillarity, absorbtion spec
absorbtn of light & heat, also time of
flotation of precipitates

Try fatique of Quartz, Rock Salt.
& fluoresc crystals to various rays
also reflecting & absorbing substances
to rays

Diaphragm, Exhausted Chamber
like barometer Mirror & lever on the
middle of Dia see if any sounds in the
atmosphere (2) disturbance of Barometric
pressure Vibratory in character during
Aurora, Thunder & Lightning storms

See in dark box in dark room of
any crystal is permanently phosphorescent

Combine with those crystals which fluoresce + give light when crushed. Sulphur Phos Se Arsenouite Etc Ammonia which change from Amorph to crystalline slowly = If the change is slow should get fluorescence for days –

Dr Grothe to make a lot of fluorescers with various amounts of impurities Contained therein for instance Cupro Cy K with say 1% of 100 dif impurities

Make some very large crystals of Clear non deliquescent crystals by slow evaporation in quiet place Crystals to be used for Exput

Determine Boiling point of water with amyl acetate on top –

Powder up all kinds of crystals. 200 mesh or 150 slightly moisten with its best solvent use steel dies + give greatest hydraulic pressure possible when hot, to get plates to experiment with, make some thin ones 1/8.

possibly there are substances of enormous diaelec capacity do for dia what a magnet does,

---

Possibly pure water would conduct if it was diluted enough by a diaelectric Hydrocarbon which dissolved more traces the water molecules might act as a gas would in a vacuum –

Try Hydrocarbons with water + mechanical agitation + points close together.

High vacuo heat pole by sun glass get Edison effect, + continuous conduction get highest vacuo beyond X ray stage use absorption methods also, absorb Hg vapor Important to prove electricity goes on the Ether when matter is reduced to lowest stage

Take several salts which are not deliquescent but are Transparent, melt them in their water of crystallization under great pressure and then slowly cool, see if can get a good clear block.
Do this also in sealed tube with water absorber — put also in fields —

Fluorides & Phosphoric acid have bad effect on LiOH better keep these out of cell —

All salts Lithium Sol. least sol Phos Li
Phos Na + Li fluoride Li + Si
Li salts even come not precip by perchloric acid
Sulphate Alumina Oxalic acid Bichl Pt
or Tartaric acid — Probably LiOH, in Battery stops formation Al_2O_3 films
+ is a solvent of something or prevents solubility " " which NaOH or KOH dont, The cell stands up on hot test quong twice cap of K + Na therefore must keep NiO_2 stable —
Li forms peroxide when LiOH is heated

Try plating Zinc on Magnesium plate from Sol containing strong Silicate Kott +

Telephone receiver —
Tellurium or Selenium point
Very fine + short or ball probably
better say 10/1000. dia

This will have enormous resistance and will heat, if Te Se has anything like expansion of Sulphur it should make a loud telephone + non inductive. Try Red phos, conducting variety of Sulphur Tungsten bronze Magnetite Sulphide Silver Vanadium Ox — Sulphides etc probably want special induction coil so Red Coil be about same as contact point — Try anhydrous Ni_2O_3 Co_2O_3 also as Thermo,

Telephone Buttons use silver cp press Tungstic acid in Ag + Reduce in H, also press reduced Tungsten powder very fine into the silver, press + repress until surface fully covered, Ditto Tungsten Bronze — Magnetite, Platinig-

Ni Fe small test cell. Try absorption spectra when cell short circuited - ditto with Lots metal oxides + Chlorides Bromides + other radicals of every kind with an alkaline base also compounds held in solution by Citric + Tartaric acid — Also try Lead battery, also Electrolytic decomposing cell with 2 sheets, also plating Solutions —

See if the bright lines of the spectrum are reversed by passing thru very thin films of metal deposited on glass in Vacuo, also those metals which oxidize seal them in vacuo

With a thermo pile joint paint one with lampblack to lower its temp by radiation + polish the other note dif in Voltage at 212 —

Uranate Lithia should be interesting substance (Anhydrous by fusion Tungstate Lithia also)

Thermo pile surrounded by helix –

See if current given if iron wire, or any wire of a metal touches a strong magnet (10) current given out at junction, also different metals laid on magnet, have metals very thin + then touch with another metal Use galvanometer see if current steady, magnet on + off.

Make saturated solution of a good crystalizing salt then stir in hot clay $SrCO_3$ + other precipitates + let whole cool off + crystalize — Seperate Crystals by Hydrocarbons.

Saturated solution hot + while hot pass powerful current thru while cooling + see if change Try also above in Mag field + E stress Try phos + fluorescers salts + if any salt fluoresces.

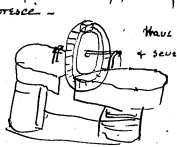
Very thin Vacuo deposit of metals + note absorption spectra, Conduction for Elec also same in Mag field, Heat stress on glass, current passing not action on light reflected

Volatilize Subliming chemicals through helix also magnet. note phenom.

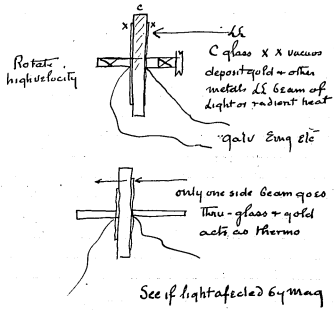
Cores of dif metals alloys etc 1/8 dia 1" long wound very fine wire, + sensitive Gal. Eng wireless receivers touch hot wire dif metals see if get kick =

Make small helix of say 1/4 bore 1/2 long 1/4 thick of wires of all the metals that can be got into wire + insulate wire –

Make a transparent disc or disc of insulator secure pockets on its perhiphery in which Crystals are placed with one side of pocket transparent Collodion for instance + whirl it thru a concentrated magnetic field at highest velocity possibly to see if fluoresce –



Perhaps an exceedingly conc magnetic field would alter fluorescence of crystals, the strength Color, spectrum, rate of dying out, susceptibility to heat electric stress X R or radium — possibly some crystals which do not now phos or fluoresce will do so under these conditions — also in a helix with strong amp + oscillating current,



Thallium Salts more delicate test for oxygen H_2O_2 than KI + Starch use for chem Recording —

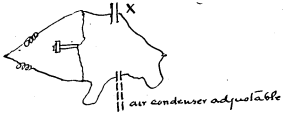
Try Oxalate Thallium for fluorescing

Thallium Salts sensitive to Light.

Eng – Aluminium cylinder with film formed in Na Carb then pen resting on very lightly. or the pen have film formed on it or $SrCO_3$ used moistened with Carb K –

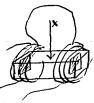
Put K polysulfide Liver of S in Carb K or other Al Ratcliff Dol to prevent loss energy – Ferri r Ferro etc those Salts which go up & down by Oxdtn

See if conduction of Electrolites by Kohrausch method is same when dif metals are used for Electrodes —

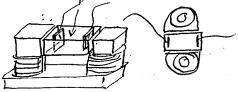


Capacity slide in X all kinds plates of powdered crystals hydraulically pressed ~~a~~ other matter for Spec Inducit Cap

Point resting on metal cylinder Emg wireless current fuses to it —

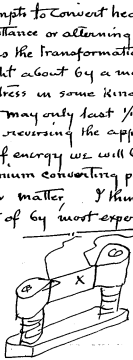


Box or cell, surrounded with helix of wire to magnetize & position the molecules — pass beam radiant heat thru liquid — use plating Sol say Sulphate Zinc Zinc Electrodes, also other plating Sol Fe etc, The molecules being positioned should give Current * "also try it thus



Move the beam — use radient heat from Zinc or metal of which Electrodes made of to Gz in molecular resonance,

In all attempts to convert heat into Elec use intermittance or alternating movements of the heat, as the transformation will probably be brought about by a momentary or limited stress in some kind of matter, & then cease, it may only last 1/1000 of a second hence by reversing the application of the source of energy we will be able to utilize the maximum converting power of that particular matter. I think this has been lost sight of by most experimenters.



X is plate of glass having a semi transparent film metal deposited by vacuum process - pass intermittently beam radiant heat. It should transform it to E as molecules are positioned by the Mag as para or Diamagnetic. Try several metals.

I think that iron gives a black film whereas Ni Ag Au etc gives green, this peculiarity of iron may have something to do with magnetism put in powerful Magnetic field & see if its transparency is changed by magnetism

With Oxalate Lithia & arc light use absorbers of light of different refrangibility to see if it is Ultra Red or Ultra Violet or beyond which causes the fluorescence use Quartz sides to Cell, possibly its Intense or high amplitude ultra red that does

See if Carbon Tetrachloride dissolves or affects Kineto films also experiment on use Telra to stop Combustion of film.

See if chlorinated acetate of amyl isn't a solvent for film stock, & also if some highly chlorinated hydrocbn solid & perfectly transparent isn't soluble in amyl acetate with Collodion to render non inflam —

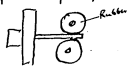
KOH dissolves film stick. soak in weak sol. + dry away from CO_2 this will concentrate + semi dissolve the film stick at the juncture of the filament + film + then when dry it will act as a cement after KOH removed

Have Howell flash a Tungsten + Tantalum Lamp with Carbon at as low a temp as possible then see if forms Carbide at high temp — to measure its economy + life -

Any theory of the Ether must explain

1st must be isotropic
2 must explain polarization
3 why light travels slower in glass than a vacuum (if it does)
4 Aberration
5 Double refraction
6 diffraction –

Rubber roller pressure foot for Eng



Perhaps $Ni(OH)_2$ will go to Ni_2O_3 if cell heated + $LiOH$ used 13% + saturated with $LiOH$.
this would be good for Thermo Conversion

Arrange very delicately suspended fluorescing substance for dif rays + note if attraction of anything

Polished plates of Gold, platina etc Lay on these plates, pieces of metal of higher voltage in the electrolytic series than Bismuth After long contact develope if any penetration of the metal into the Au Pt etc for development use Conc Formate Bismuth which will in time by electrolytic action deposit black metallic Bi

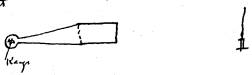
Also use a stencil of some figure and put between plates try at ord temp if it throws off metallic ions + give figure of stencil on developement also increase heat use Mag X ray XYZ E fields + also heat with the fields

Formate Bismuth in Gelatin on glass ought give Photo,

Also metallic powder higher than Bi in electrolytic series spread on glass thru transparent non-oxidizble medium should be oxidized by Ultra red, hence a photo could be developed by formate Bi the oxidzd particles not showing black as only the metal would reduce the Bi Aluminium sheet might work with Rock salt hence the oxidzd part of Al not being reducing possibly other developer than formate Bi would have to be used as its slightly acid, Cu in cakes Could photo in the dark —

Selenium absorbs Hg in Vacuo, try it in extremely fine state,

Experiment with jingling Keys in closed chamber with funnel & sensitive flame idea is that the higher the rate the less there is of lateral spreading out once wave is plain front



Theory

Canalization of electricity along a wire is due to the shortening the vibrating path of the Ether particle by interposition of molecules of the wire if wire was 100 miles long & 50 of it was space taken up by the Molecular orbits the space travelled by the ether particle would be ½ of what it would be in free space outside the wire hence the path of heat res would be the wire

Theory The reason light travels in straight lines not spreading out like sound is that the Ether has no pressure but consists of ~~st~~ fine particles suspended in space by mutual attractions like planets but ~~the~~ particles are in rapid to & fro oscillation not promiscuously in every direction but lined up in every direction. A Crystal of a chemical substance representing these lines, The wave motion of light at right angles to the direction moving only occurs when the oscillation strikes matter but this form of motion does not take place in the Ether — The reason why it takes

This form when the waves strike matter is due to the propagation of the waves thru matter by flattening somewhat the circular orbits of the molecules by the impact of the ether particles

Theory Light waves passing thru a prism the waves having the most rapid vibration will deviate to the path having the least resistance or least molecular resonance.

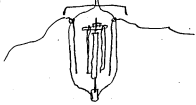
Theory Why cannot gas pressure in a closed space be explained by showing that the molecules have orbital motions like planetary systems, all molecules having same dia of orbit + when the pressure is doubled the orbits diminish and give out energy a molecule in space at absolute Zero having still orbital motion of its particles + all of the same dimension for all elements passing of a gas into a liquid being a mere act of pressure changes the orbital diameters + would be instantaneous if the Energy could be removed fast enough + no critical point

Thury

The difference between molecular matter + the ether is that the latter is elementary + single particle whereas matter is a compound is complicated + made up of many particles has orbital motion, imitative of planetary systems, and they have no motion of oscillation themselves only move by convection all motion in matter being due to the movements of the Ether altering the symetrical orbits of the atoms or molecules.

Make holder for Albert Wurth to hold 6 strips glass + rotating armature to deposit metals on in Vacuo.

Dally also make one with 4 in lamp bulb + .



Use arc furnace highest conc. mix metals + metalloids + analize resultant for new metals or changes —

Kinetoscope with motor and storage battery with clockwork control, Take Rose bush, peas etc use arc light take picture every 3 hours during period 3 months,

Diaphragm Silver deposited 1/2 inch dia in Center, facing is a Voluto coil 3 or 4 turns Connect to wireless to get oscillations about 100 000 sec use adjustable inductance — use funnel. Sensitive flame also see if there isn't very little lateral propogation of the wave also if it affects a gold leaf electroscop

Theory –

Molecular matter in a closed chamber under pressure the molecules are at rest and the pressure is attained by the bombardment of the Ether particles against the molecule on account of inertia of the orbital mass of the molecules they press against the glass & stay there pressing against the walls their circular orbit being distorted to oblong orbits by the constant bombardment of the ether particles –

All atoms have the same orbital diameter

Compounds formed of different atoms form another system. Either the radicals will form the central orbit & the bases will form an outer orbit both going together having a larger dia orbit than an atom or vice versa —

Expmt. Emg principle

3" bearing - determine Coeff of friction to weight -

Make very high speed gyroscope - small motor + little high capacity storage battery, balance on a scale + note of change of weight - if so try motor + gyro in Vacuo with leading in wires

Instead of a prism use cone shape rotate at high speed use slit + Spectroscope also try, reg prism + shutter + rotate,

Possibly attraction of matter by Tuning fork is electric motion of air (10) compression electrify it + produce attraction test it.

Deposit metals in Hg Cathode (rare) also when Hg has Lithium in it ditto Calcium

for studying crystalizing in strong fields use Micro + glass slide a drop of the liquid also several restatant drops -

Theory If molecules or rather atoms are in a state of rest only their electrons moving in orbits + it is only the ether particles which Convey motion by disturbing the orbit. The the movement of the ether particles in a helix would Cause the orbits of the iron atoms to be turned from circular to oblong + diminish the diameter of the Bar + lengthen it. The effect of Electric as against Circular in connection with shortening the path of the ether bombardment be the cause of magnetism If iron hardened the orbit would not return to Circular -

from Experiments on a non com dynamo made recently I am inclined to believe that Magnetism is purely Electric + on the surface of iron Entirely

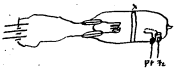
Theory

With very thin films of Nickel from Vacuo deposit light or heat waves striking the atom should flaten its orbit + this should produce magnetism by using a helix + a shutter should get oscillatory Currents Try other metals as well, + if unlike iron they have not ability to direction themselves use powerful Mag field + then light

Investigate the current produced when the Chalk cylinder is rotated = make quantative measurements Volts and amp — use dif Chalks + liquids —

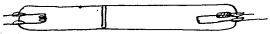
Wave lengths of light vary between $\frac{1}{33000}$ of an inch for red and $\frac{1}{55000}$ of inch for violet mean value $\frac{1}{45000}$ inch

Think Mellonis expmt passage radiant heat thru matter should be tried in Vacuo.



X the plate of material

first try in air keeping current constant, then in vacuo



Long tube 62 better say 3 ft to keep away convection currents of air. There are serious difficulties in this experiment & I guess can only determine relative conduction of dif materials in Vacuo only.

Try Flintglass Rocksalt Icelandspar Quartz Borate Soda Mica Citric acid Rock alum Sulphate Copper & others – Kunzite,

Rock alum absorbs heat rays, perhaps to fluoresce invisibly + if made a lense might raise rate vibration up so it would cause ptBaCy to fluoresce.

See if refraction of a transparent iron salt is changed by a magnetic field or X Rad & stress light right angles. boiling the liquid Try other liquids than iron salts.

Aluminum Rectifier See if affected by magnetic field- & stress Rad, Light shining thru liquid on the film-

Mix fine powder fluorescer with good transparent absorbers of heat & compress hydraulically in thin plates, powder very fine also dup with both powders slightly moist See if vibrations of Ultra red absorbed with set up strains in the fluorescers and give light also when possible put the salt in powder which is least soluable into the conc sol of the other & crystalize over it.

Try Tungstate of thia ignited, for X fluorescer also Uranate Calcium with & without ignition

Subject liquids to spectroscope + powerful fields to alter absorption lines etc Nitrate Ni especially at it cuts off sharply the red + violet ends if possibly can be magnetized

Daily make lamps thus using Tungsten municipal filament, X is slip glass with several patches of crystals all dif to determine fluorescence + phos by Ultra Violet direct without interposition of glass or other absorbing medium - bring filament up as high as possible for a moment only

Kinetoscope Use Quartz prism, Ultra violet light from arc light, then throw picture on screen coated with a fluorescer. Oxalate di etc

Wheel mount slides on shutter no light coming in dark room, to discover good + rapid fluorescers for Kinetoscope.

Test slides containing crystals with Tungsten Municipal, high + momentary –

Think porous partition could be found with pores so small that only the Lithium molecule could get thru not K or Na By using heat + proper fineness the dimension of many molecules possibly hydrated, could be determined by conductivity of Sol.

See if there is any phenomenon when fluorescers are dissolved If solutions are only enormously subdivided crystals + the ultimate molecule a crystal Those crystals which fluoresce should when dissolved absorb the particular ray they fluoresce to + liquid in dark room might if eyes very sensitive give a dim light – if not could leave Dry plate photo against cell for few days with Cover + hole into photo The hole Benzol chemicals probably good,

got rid of it by using alternator – May 20 1907

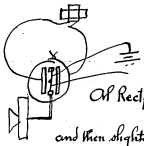
Emq Coat ends of cylinder with Ni_2O_3 or nq % mix – or press disks of same or use washers of lead zinc or other metals Each end of $SrCO_3$ to get rid polarization

Also discard connection of cylinder to mandril & put on auxilliary pen so both Electrodes will be moving

Investigate the current & voltage which arises from turning the Emq cylinder also which kind of cylinder & solution gives highest results —

John Ott make 3 test cells long tubes with smallest amount liquid possible —

Notice spectra of the scintillations also spectra from light of scintillations from emery wheel with metals and also Quartz, Beryl, Pitchblende and hard compounds of dif metals may be a rough quantitative analysis on the field with Direct vision spectro



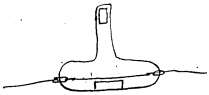
Of Redfr. Balance X

and then slightest movement should give powerful current as high voltages and strong currents can be used

Try Aluminum Rect on Spark coil connected to Vacuum see if it dont change phenomenon of the discharges. How it affects X ray Tube

Wet Emq Thallous Hydroxide – Ammonia –

Filament in Vacuo laid flat near solid steel block, above it another block held by magnet bring filament up as high as possible & let block fall – to flatten Carbon, Jungsten etc –



Peltier effect on thermo may be electric cementation
Try hot exp'nts by passing current from one
metal into the other, joints scraped to fits if
possible in vacuo - using Tungsten spiral adjacent
use strong currents + shield all but junctions
from radiation - let it go for several days
Then disconnect + scrape small amounts off
surface + test in Spectro, making several
scrapings to test depth cementation has
penetrated Try Red hot carbon pressed
against soft iron - see if iron hardens.
also Tellurium against Bismuth, Electric
production of alloys so to speak Find
several alloys which give heat on formation or
are definite + try the two metals at junctions
also the alloy opposed to one of its metals
+ current sufficient to decompose it, there
should be absorption of energy + production
of Elec + be a good Thermo

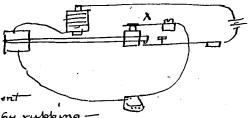
It is possible that thermo piles or couple
should not be placed in contact but another
metal intervene + that a good couple should
be tried with every kind of conducting material
intervening between them with hopes of getting
better conditions for H into E.

Heating the whole pile while Elec is passing junctions may affect the voltage —

See if thermo junction heated under pressure affects Voltage

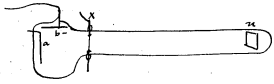
filled distilled water + heated to get pressure

Try experiments on Thermo of heating the whole Thermo several hundred deg + then heating the juncture 100 deg hotter. get curve.
Try in Vacuo - use ~~Tungsten coil~~ Platina coil.
immerse whole in oil for general temp.



To test
Thermo current
produced by rubbing —

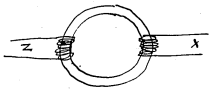
Vacuos deposit — make thus



Vac tube exhausted to best point tube 36" long glass plate n at end a b the electrodes of gold X a platina wire 1000 dia — see if molecules go in straight line + cast a shadow + deposit no gold on shadow. if gold works Try Ni Fe also deflect the paths + destroy shadow by magnet also bolting cloth place platina

Try in Vacuo Aluminium poles and put various things of low MP on surface of electrodes to see if can form deposit, on glass Try Sulphur Selenium, anhydrous trans + opaque + colored crystals see if S deposit is crystaline — Paraffine Phos acid + many other things

See if Copper made cathode in KS or NHₓSulfis. is prevented from being attacked,



Let a 500 lb weight drop on part of the soft iron ring from heights of 10 or 15 ft put strong current in X see if mere deformation of the iron will give a current in Z.

Capillary tube of quartz – ends plugged with Tungsten Municipal filament to act as electrodes, Put whole in Vacuo of some Welsbach very porous material fills tube should get at proper pressure, light with very little heat, possibly on gas necessary

Make Rez Spark tube with Tungsten instead Rez Al Electrodes – notice any phenomenon – Also Sheet Tungsten for X ray impact Howell make.

Vacuo deposit metals on glass also coat glass with Canada Balsam & deposit on this - also Castor oil — lay flat when flowing liquids used, could determine velocity of a metallic Molecule from the the distance from the surface of the castor oil the film is formed, possibly it might not penetrate & yet it might deposit on the glass nolwithstanding there was a film of 1/32 of Castor oil over it=

See if Magnesium electrode will act as a good Cathode in all plating solutions which are slightly alkaline & see how alkaline they can be made, Try plating very thin films metals so as to be transp —

See if Magnesium can be plated by Vacuo flash process.

Eng — over Silver cylinder stretch over thin rubber elastic - moist = KOH, Etc

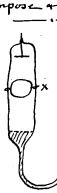
Metallic disk Emq rotating in liquids—

EMq - Moisten chalk with Diaelectrics,
Tetrachl Carbon, Benzol, Myrbane Cumol.
Turpentine, CS_2 & other liquids — also
try spark coil + Req silver button Carbon
Transmitter —
also metal cylinder coated with hard
diaelectrics varnished on like shellac, Silicate Soda
Sulphur - film dope, gum varnish etc.

Try absorption phenomenon in spectroscope
all metals in films obtained by vacuo deposit
thick and thin, especially lines from a
metal same as film Try when heated,
when in strong field right + left also when
current passes DC + AC + high rate
oscillations, also when heat Mag + E
acting conjointly + all combinations —
different source of light + also from
spark.

for depositing high MP metals like Pt + Tungsten, ignite the oxides form loose strip + Reduce to metal by H_2 then the fine particles will reach MP easier.

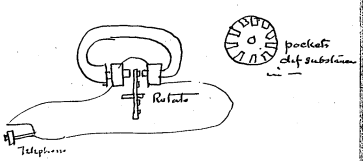
Vacuous deposit find three metals that give the 3 primary colors by transmitted light, superimpose + see if get white or focus sep.



X ray o stage vac
x platina damper, piece iron on it to control outside by magnet, Bombardment of mercury Causes index to rise, H can be 33" high -

Daily deposit carbon from Recovered grafite also from a flashed filament,

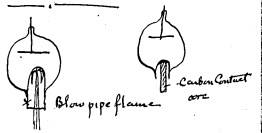
Coat platinum wire with various substances which will cling & melt or 1st coat with Acetate Mg. & ignite then coat this with the substance, & flash vapor in Vacuo & deposit on glass. Try Sulphur Arsenic Selenium Fluorspar Cryolite Na Cl, KCl, Phos Na AgCl, Boracic Acid, Borax PbCl Silicate Zinc Willimite, Tungstate Ca anhy Pectolite, Sulphides for very infusible non oxide compounds Use Tungsten filament



X ray tube buried in solid cube Paraffine 1 ft sqr - see if sound ~~shadow~~ shadow, when Rg light + X comes thru slit - use photo plate, if any deviation two lines will not coincide

If iron decomposes Cyanogen in redhot Kcy then an iron filament should decompose, Cyanogen in Vacuo lamp + receive a maximum deposit ~~#~~ perhaps some phenom show up use side tube heat AgCy —

Possibly make diamond by fusing KCy alone with iron under pressure in sealed tube or with some Sulphur - dissolve out + exam residue micro, Try Xanthate K + KCy with Fe sheet also powder reduced by H, also use arc,

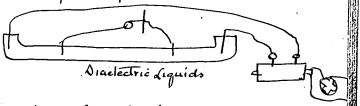


X platina

OVER

See if Telephone or Eng interpolated in circuit when Vacuum is so high no current passes from powerful coil when cold & then heat. If it works extend distances of tube several feet if no change Resistance make a spiral tube – I am almost certain if the 2 waves of the coil current are equal we shall have conduction – even think 1000 V Continuous will give current of not 1 V. This is Edison Effect

Wireless induction coil with Balls & cap for 1 Million sec ought to give sound waves in the air. Use lead disc 24" dia see at edge there is a sound shadow. Try a wireless Receiver of no response then?



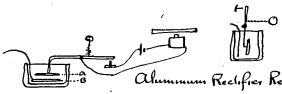
Induction Coil see how far waves of tones are transmitted

High speed waves 100 000 or more
" Phono - Records
Slow down so they are audible

Connect a tube to phono + let discharges from Induction Coil produce sound theirin
Run phono 500 Rev — Then slow down

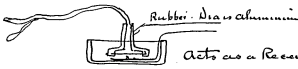
Make condenser with lead foil + Aluminum + paper soaked in a hygroscopic Carbonate or phos etc

A closed ring trough filled with an electrolite say Bi Carb Soda - divided as far a can by a floating partition of a sheet of Nickel with sheet aluminum on other side — When induction Current is sent into water this partition should float in one direction -
Also a pendulum should be moved in the liquid - The CO_2 Radical should repel the Aluminum -



Aluminum Rectifier Relay

on the assumption the CO_2 Radical will give repulsion when evolved at the Aluminum electrode,

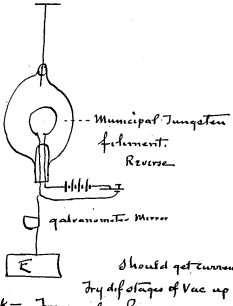


Acts as a Receiver.

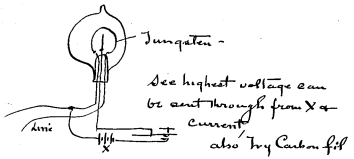
Dinitrobromobenzol – remarkably large crystals by crystalizing once from Naphta + 5 times from Alcohol the concentrated alcoholic sol Emits sounds when the salt crystalizes — see if light given in dark – also try modify sounds by Magnet, X rad – Elec diaelec stress – this may be good substance to try experiments with on control of Crystalizing

Naphthalin sublimed twice – digested with strong hot H_2SO_4 washed with KOH. & distilled therefrom by steam crystalized twice from Naptha & 3 times from Alcohol. is when powdered highly electric,

Air has a voltage which varies as we recede from the earth,



Try dif voltages of Vac up to no spark – Try wireless Receivers –



A spark does not pass thru high vacuo due to enormous attraction of one of the electrodes and also of solid matter for the gas molecules. when a wave come from the P matter things all the tighter, + no stress can pass, no contact with the ether is possible Compound matter is attracted by effect of the elec like dielectrics are in a leyden - like the break in an electric furnace by matter piling up around the Electrodes Think of Tungsten fil used a high Temp in Vac as one pole that conduction will take place in any stage of Vac.

If X ray tube the ray itself is due to those particles which go in a straight line undeflectable by a magnet then it occurs in ordinary incandescent lamps + when depositing metals in low stage of vacuo - as these give sharp shadows as well in poor as good vac - possibly the energy of the blow is wasted by cushioning against gas layer on the gas and the oscillating periods so diminished that they do not give fluorescence or photography - possibly photo plate in 48 hours might.

The reason X ray cant refracted etc is that it is due to the vapor of matter raised to gaseous state + has no rhythmic sequence.

Photogh thru the various flashed films all the dif metals

Act on Uranium - Mongste Barium Lead with Arc furnace see of increased Radioactivity

June 1 1907

Have just struck a good principle —

Take a permanent magnet like used in large Telephones with double prong permanent mag insert a small Pacinotti armature 24 slots Commutator dia 1/2 inch length 1/2 inch Rev 6000 min — around prong to vary the perm field in the 2 telephone line spools If now signals are received of over the line by talking into a Bell Receiver this varies the strength of the field, now the armature revolving at such a high speed the impressed voltage is amplified enormously & Retransmitted with greatly increased Current. The extra power coming from the motor rotating the armature,

This permits of doing away with Carbon Trans & Battery on telephones using only the Recr for Trans & Recv — A phonogh style of clockwork runs the motor, The winding of same runs Central Bell, a part of the winding Time only be used —

This makes possible a Real Microphone an amplification of Phonogh sound — use in Telegraphy & many other things

pr

Plate out Aluminum from Al salt or KOH, on Magnesium Cathode – in presence of a powerful reducing agent like pyrogallic all out contact air say under layer Paraffine oil —

See if Al_2O_3 plates out on Magnesium Cathode in Aluminate Soda or K or with presence of free alkali — also on other metals, to get sheets of it —

Think some results obtainable from superimposed films of metals each very thin so light will pass freely through all – use in sunlight spectro Ele

Measure electrical resistance of films of metals deposited by Vacuo process also when under influence Mag Light, Heat X Rad Ete –

Use glass coated with Sulphur + deposit Hg upon it. by heating Hg inside Tube in Vacuum film forming Tube also use Electrodes of all the metals to form films on the Sulphur surface –

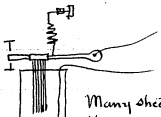
Test Emg for self producing current when rotated using dif cylinders, liquids, + heat.

Experiment with Edison effect wash out bulb with Hydrogen & other gases.

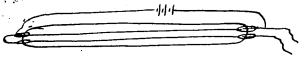
Try Carbon filament + central wire at best point in Hydrogen Vac for flashing + then at dif points as vac gets better, for Edison Effect.

See if Ultra, Light, Rad X magnetism Effects surface of Aluminum rectifier

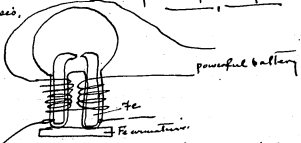
Iron & Copper wire red white hot one end in dark room with photo plate also with & without best fluorescence on end of wire Suddenly quench heat and see nothing – Repeat many times + develope photo – Try Gold leaf Electroscope



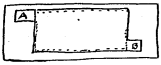
Many sheets of metal seperated by 1/1000 inch Mica at places, immersed in a plating Solution so no gas given off use same metal for anode + Cathode, say Copper Use alternating Currents Capillarity to be used + varied to produce motion.



Measure resistance, manganin wire when Current passed one wise, way the ditto the other — The Vac being so high no spark passes.

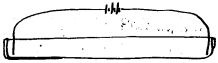


Raise Vac till Coil passes no spark no Energize Mag + see if it passes.



glass plate.

first flashed in Vac with a transparent film of metal, with a guard over it to produce right shap giving the lug A for contact Then put guard over & flash the second metal B. When these 2 lugs are connected to galv we have a Thermo pile where there is no shortcktg of the Current the lugs being single metals or layers Can determine thermo pile actuatg at Light heat Etc Could use Platina & flash Pb Etc — use light with alum Cells Etc - Could make quantitative measurent with this — Also Selenium-Tellurium —



Plating Sols & others

Long Trough - saturated Solutions. slow cooling - see if more crystals at one or other poles if crystals are dif or are positioned

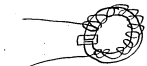
Make cell thin glass - rubber tube between immerse photo plates in all kinds solutions, organic & inorganic & — photo always a fixed object with constant light & conditions to bring out phenomenon — Have a circle of colors also in the photo also magnetic field,

In Rectifier try K Iodate alone & in KOH with Ni + Pt plates —

See if cementation between red hot carbon & pure iron can be hastened by strong currents - possibly one pole might absorb C faster than the other this would be a highly concl thing if C could be forced into spots quickly by making the iron one pole then layer carbon then iron other pole the whole out contact air + heated,

Possibly if Magnesium cathode + very strong alternating Currents possibly Zn Mn etc in the Kott, would get light from Cathode if observed in dark room —

For rapid vibrations in Telephone make Cos extensions from perm magnet out of Iron reduced by Hydrogen using Ox from Ferrous Sodium Sulphate & Compressed —



Magnetic ckt splits measure inductive Cap when dif materials, liquids, solids close the gap —

See if there is anything analogous to Al Recip by Sharpened ends of Slitted magnet ring — perhaps above Experiment will show this

Scrape Aluminum + Lead discs 1" dia so they lay flat on each other, build up pile of 24 pair - press together strongly by screw clamp & measure Res & see if the res to current is dif according to its direction.

Cyanine a dye sometimes used sensitize photo plates to make Orthochromatic easily decomp by light, sometimes even in the dark both Dol & plates liable decomp. use for X YZ · X Ray & other things

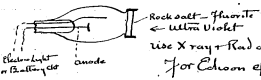
Perhaps there is a differential of Elec in passing from on metal into another according to the direction Thus Zn Cu Zn Cu like flake Try flake sheet discs 1/4" Sqr piled on each other press together, then alternate the current see if more current passes in one direction than the other - also magnetize.

Auto Telegraph paper should be fine way of trying chemical reactions electrolytically + removing the primary reactions away before secondary reactions take place can run paper 1500 ft min —

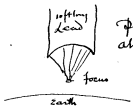
Try Radium tube between 2 plates Aluminum equal thickness - see if LeSage corpuscles? give stronger photo next to earth

plates to be exactly equidistant from the Radium metal tube —

Try shielding Radium tube from LeSage X by Lead rod 2" dia 10 ft long plumbed to point to center of the earth, see if photo more or less with + without rod.
Try other metals



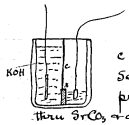
use X ray + Rad also —
for Echoon effect,



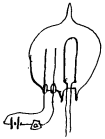
Le Sage
Photo plate at focus
also fluorescent
Crystalize things in focus

Also place lead over delicate weighing balance

See if capacity as a condenser increases
try fluorite also fluorite Quartz
Coated transparent film platina or silver
+ pass Ultra Violet X + Rad connecting
armatures to Electrometer or use
alternating C & Telephone



C is rubber X pressed Strontium Carb
See if 21% KOH Solution at higher pressure will force current of KOH thru $SrCO_3$ & give current of itself If not try Current get rate of flow. or C that will balance the column



See if Edison effect ultra from filament will permit C To pass

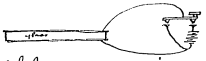
Scintillations from discharg from battery of Quad Condensers on closing are a series of Explosions of the molecules of the metal

Spectroscope at a b c d showed show dif spectra

Try scintillations in moderate vacuum of highest conductivity + so on higher manipulate spark point by a magnet from the outside

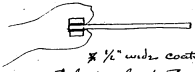
---

Absorption Spectra see limits of dilution



glass coated film metal each side see what effect light has passing thru.

Distortion Condenser.

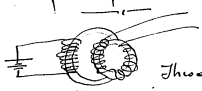


glass rod 2" long
* ½" wide coated both sides film metal, see if vibrating causes electrofiela covers, also connected to 100 V battery
see if variation of elg on vibrating

Take piece Kinetoclear film, coat with platinum in Vacuo – then immerse in KOH + dissolve the Nitro cellulose leaving clear film – Try platinum on polished sheet Zinc also aluminium coat off by KOH + Cl also polished Copper + coat off by KCy or Copper NH_4 sol this will show if films are perfect

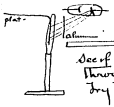
Get lot small prisms + coat with films of dif metals by Vac process.

See if intermitted light from arc by shutter gives greater or less fluorescence or phos. than over the same time when light is steady – also if fluo + phos substance having no any attraction

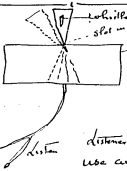


This should give a good transformer or nothing

Form plates for Optical work by successive dipping in Saturated Solution & possibly wiping Surplus liquid off solid at very thin layers



See if the Aluminium particles are thrown off see lines in spectra by thin shaffinin —



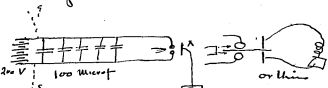
Listener in separate room — use air CO_2 Vapour H_2

Try low & high notes, Vary angle of funnel —

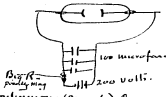
Heat Willinite, Balmain Fluorite $CaWO_3$ Red hot, then chill in water while subject to X ray also chill in Organic liquid —

See if Scintillations give etheric —
also if Ultra Violet light will cause
discharge when points further away
& thus give stronger Scintillations

Fire a bullet through water the box having
thin cover of substances giving clear
hole also bottom, See if alignment
is perfect — Think there will be refraction
or bending like light — fasten postal
rigid & fire by magnet. If refrac light
follows mechanical laws & caused
bell be worked out by this method
of Experiments use high & low speed
bullets & dif liquids, Even solids
ice for instance — Crystaloids &
amorphous substances.



Blow air to X between points to platinum disk
see if get continuous Current



gradually make Vac
+ see if at any stage
Condenser discharge
points 1/32 apart
think should get

Continuous (nearly) Current,

If this device can be got to work it would be practicable to make a fluorescent lamp by Coating one terminal with fluorescent Crystals —

Try condensers with Edison effect in Various ways —

Have Dally Coat Zeeland spar with plat one side another piece both sides transparent —

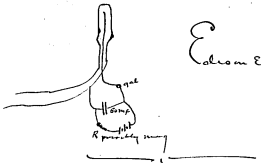
Possibly reason aluminum spots dont blacken Vacuum tubes is either that the Al_2O_3 prevents it like MgO on plat or there is a deposit of Al transparent. Rig up a magnetic scraper to clean the Al after Vac made - manipulating from the outside

, Use 2 helix + bridge with Telephone + test all the thermo alloys I have for magnetism —

Cell made of 2 glass plates, film platinum inside transparent — the platinum inside cell + to act as electrodes. Try Electrolytic Expts with Light, heat, (Radiant) passing thru also diaelectric Cap with + without Light,

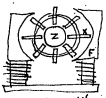
Investigate Nty from Ni Fe Storage cell. Use cell + pass N free of O + various stunts to obtain Nty from the air —

Eliminate H electrolytically from various solutions + finely divided metal Cathodes in presence of stream of air — also N — + provide for Nty absorption — also try heat, high as possible = We made Nty once by pass H over Fe_2O_3 —



Edison Effect.

Find old very much blackened incandescent lamp measure Res of the film.



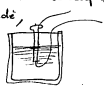
Non commutator dynamo X iron bars fastened to ring all of which rotate. Z is the fixed armature. F the field magnet. The doubt is that the magnet lines of force are fixed & do not move with the Iron like a current in a wire —

For coating filments with dif materials, put the stuff on the filment by dipping in Cona Solutions till right thickness is attained, Then instead of getting a Vacum + heating the spiral, use or heat fil in Hydrogen with phos anhy to take up H_2O if that is formed or if S something else. use atmospheric pressure or greater. Oxide of Lithia which is not reduced by Carbon could be got on Colourless & then after Vacuum would not fly off. Over this could put Tungsten
Tungstate Lithia —

Try double Beams'-

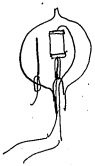
To prove that thermo elec is a species of ionic Electrolysis by cementation, make a lot of junctions all kinds put in series + enclose + put on a lamp current + run for several months. scraped fits at junctions under elastic + strong pressure, afterwards scrape off + test spectro.

See if there are currents at junctions metals + liquids where it eats away like the Zinc hanger in Leclanché,



Pure Boracic acid in H_2O without any trace of Alkali is one of the worst conductors known

---



For flashing films use lamp bulbs

Seal off + then can keep from Oxdg + measure. Res. etc

Peltier effect – see if thermo couple don't expand more one way than the other when current sent through —

———.———

Pane glass – tin foil each side, see if bending don't change it as a Condenser —

Some phenom should come from two metals immersed in Hg one of which amalgamates + the other like Nickel that don't, should have dif Res according to direction of the Current, Thermo on heating etc,

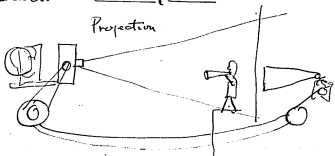
———.———

Rubber funnel for phono (soft) diminishes amplitude high notes + effects low notes very little, thus correcting phono,
This is probably reason rubber listening tubes appear make music perfect,

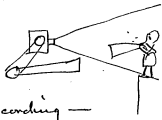
For high voltage dynamo, have the armature fixed and rotate a commutated field.

60 000 Volt would then be easy to commutate as current etc is small — The armature could be in oil —

Projection



Kinetophonograph — get unison by synchronous motors —

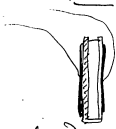


Recording —

Use magnets to record on film + Record the "starting point".

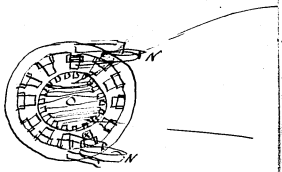
Try smoke ring box with Ether + 10 ft away a flame - project the Ether vortex into the flame
Try tetrachloride Carbon to dimmish flame
Try a moist paper of phenolphthalein + project Ammonia rings.

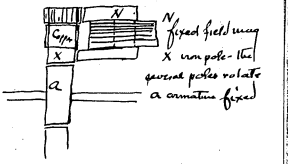
Test slides with the Crystals between pointed poles big magnet with light, & X ray Rad,



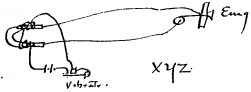
Narrow glass cell or thin very thin - Tinfoil on sides. Carry out various chem reactions in cell see if it becomes charged - also Tin one side & Pb foil other all on outside.

Try making solubility Experiments cold & also hot of various salts in Electrostatic field Magnetic field, Ultra Light, under Rad & X ray - Mag & Electrostatic Combined - also under Electric stress in narrow cells -





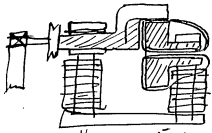
The fixed field magnet, when X ring of poles are rotated make a field by induction in the closed Copper coils - Hence we have an induction field which is provided with a "Magnetic Commutator" something new & this device makes possible a high voltage Continuous Current Dynamo without Commutator or brushes —



Filiment that should be not Tungsten

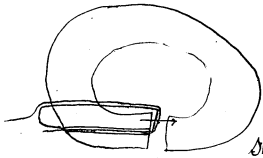
Flake Graphite same as used in battery purified by molten KOH, HCl ground up in chilian Mill with glucose or Rosin resolvant to Tear flakes apart & to impalpable powder same as given Albert Smith to try on Phono Records in machine built By Johnson — The grafite was floated in Gasolene & only that which was suspended was kept for a little while used —
I propose to squirt this kind of grafite in the old filiment die to .002 inch using a soluble chloride in Water say as a binder) by bring up in Vacuo the chloride would be vatalhized then the filiment could be brot up to dazzling heat to cause it to toughen Think it will be nearly if not as economic as Tungsten, higher specific Res & will be much tougher for shipment —

Latest Oct 10 1907 Continuous current high Voltage dynamo



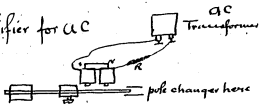
Made this-don't work – magnetism apparently is a surface action, can't penetrate Conduct lines force

They are entirely excluded by this shorted work –



Showing principle

Rectifier for ac



Reed or Tuning fork worked by ac. from transformer & reed tuned to cycles; This gives an inch amplitude at the end, here are arranged a spring Contacts to straighten the Current for chg the battery The springs of contacts may themselves be tuned so 20 @ 40 amp can be handled made a trial today of 1st one not yet got it tuned — Made this, goes good am trying make it for heavy currents & Commercial —

Feby 6 1920 [175]

About the matter in space, Ether
protons & electrons

Theory 1

Excessively small particles not subject to further division travelling thru space in every direction, at speed of 186 000 miles per second.

2nd These particles strike upon this Matter probably slowing up but pass thru the Earth & emerge with lessened velocity, but in time owing to the very small amount of matter compared to the space they regain the velocity by impact from others going full velocity

3rd While now the natural velocity of this particles is 186 000 miles per second, its probable that these encounters with matter which causes loss of Vel & of course Energy will cause the Vel of this kind of matter to diminish as a whole say at the rate of 1 ft per second per Billion years

4th Gravitation is due to the bombardment passage of these particles (Le Sage Theory)

5 The reason that the sun attracts the Earth is due to screening — the earth is in shadow of the sun from space in line with the sun + beyond it,

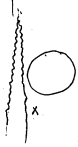
6 The Ether particles pass thru the Earth in every direction + thus would be zero pressure if there was no sun: planets etc, Meanwhile particles passing thru the sun + striking the Earth will have very much diminished velocity compared to the particles striking the Earth on dark side ~~to~~

7th = Hence the velocity of the particles between the bright side of Earth + sun will be less than on any other part. This will pull the Sun + Earth together

8th All others planets + bodies will screen each other in proportion

to their size + mass.

9th particles passing across the sun should be attracted because the particles being received by the sun is full 185 M sec while particles passing thru the sun have diminished velocity hence the collisions will not cancel out ~~the~~ hits on both sides must be the same ~~as~~ particles will go in a straight line ~~~~~~ or rather wavy line – otherwise



it will go like X

1. The velocity of light of other particles must be different + higher in shadow than in sunlight of particles from the sun.

11th The rotation of the Earth around the sun is due to What. Original Motion perhaps as it gets these particles at same Velocity in front & back those Entering from space at Velocity of 185 m/sec Exit at Shade less, same way Enter back side 185 m sec minus Earths Velocity & Exit at front — Shade less, hence It must be due to original motion & the revolutions around the sun must be taking longer time as the years go on — Its slowing up the Vel of the Earth around the sun being the function

12th — If Solid matter was receiving these particles at Vel of 185 m sec & was the same in all directions it would be stable as pressures due to slowing up of particles would be the same on all sides but If by screening this matter by a large mass of other matter so Velocity at one point on the small piece of matter was considerably

less there would be a disruption
~~of~~ of a small part of the little mass
at the exact place where it was
changed & at its critical or disrupting
point & particles might be
thrown out into space at high
velocity & varying velocities
until the whole of this matter
was disrupted by this means
we could utilize the energy
of the Ether particles to the
extent of the Earths retardation
of the velocity. Possibly
Uranium is that form of matter
& the energy is not intratomic
but is due to unequal Ether
pressures.

13th If the Ether particles can
be allowed up they can be
accelerated above their mean
velocity of 185 M per second

14 As the particle receives innumerable
impacts in every direction the

particle must have side motions in every conservable direction but these for long journeys are cancelled out & it travels in a straight line except where it passes close to large masses of matter like the sun there it meets unbalanced conditions for considerable periods this alters its general direction but the small wavy motions are always with it

If the Ether particle is a volume then the front or direction of motion of position will be opposite side to Negative

B= Now account for Light—

A continuous spectrum from solid unchangeable matter has every rate of vibration 400 m m to 2000 million million per second.

Light from the decomposition of matter or changes therein is due to molecular explosions of the combination of molecules.

16. Sodium is not a single entity, it is double perhaps even more complicated on heating to sufficient temp it Explodes + these two explosions one is ~~other~~ quicker than the other +. These explosive particles hit the ether particles passing & impress on them a collision throwing them sidewise + the length of the train of waves on the Ether particles depends upon this time of Explosion. This sets up a train of waves in the ~~[illegible]~~ forward motion of the Ether particle. The next explosion after the first + most unstable form is decomposed is very much more rapid as more energy is required the train of waves are ~~[illegible]~~ closer together. Thus we have 2 lines in the Spectrum of Sodium

17. In the case of iron we have a very complicated system. When this is disrupted or Exploded we get 200 or more successive Explosions, those requiring the least Energy explode first the remaining

Molecule or compound being more stable then more explodes & so on until the entire molecule is disrupted. This will account for the many lines of iron in the spectrum

18 = It is not necessary that the exploding piece of matter should make more than one motion it need not make Millions. The traverse of the particle of matter is fast it will disturb Millions of Millions of Ether particles before it stops & these particles being hit one after another gives the light waves

If X is a bundle of Ether particles say for illustration Millions or 1/millionth of an inch - a slow moving particle N moving across them would hit one after the other & displace each Ether particle in direction of advance of N hence these particles crowding

at G would produce say 400 to 2000 Million waves impressed on the Ether particles one after another

The Ether particles although moving at 185 000 miles a second. are incapable of affording us any energy because they go in all directions & balance out! But the smallest chemical molecular explosion can throw a train of disturbances in the various Ether particles coming from the Explosive zone & while the total Energy in the train may be less than 1/1000 of a ft lb. it will reach Millions of miles unimpaired & then if this train of waves strike matter it will set the molecules of the matter in vibration & produce any light passing through the Matter for instance glass. This train of waves come in Contact at the boundary the Ether particles goes thru straight there is no refraction but the waves impressed thereon

are affected in various ways + may take a different direction,

19. There must be a limit to high temperature and that limit must be when Matter is resolved into its final stage (18) where no further decomposition is possible

Any form of Energy from matter can be impressed on the Aether particles A train of waves from radio can be so impressed & travel at 185 M pr Sec

April 8 1920

As I said before the greater proportion of the aether particles are passing in all directions at 186 000 miles per second ~~[illegible]~~ But particles passing thru large masses like the Earth are blocked down say to 180 000 miles or less The major portion of these particles

as they emerge pass into space + by collisions have their speed reduced by a slight degrading of the speed of all the ether in space which would be almost infinitesimal, but not all of the particles as so brought up to speed,

It is probable that in free space the particles are oriented by collisions into a space lattice of considerable symetry

Those particles which have the very slowest speed may by ~~[illegible]~~ collisions take a path not straight and make in vast periods of time an orbit or immense circle. This form constantly tends to diminish the radii of the orbit finally reaches a very small circle so small that it circle is less than a billionth of a millimeter then it becomes solid matter but

The speed of the Aether particles or particles. still whirl around the ring with velocities thousands of Mile per second -

Supposing there was an orbit with a single particle or many with a path 100 Rods; This particle would on the law of General averages be hit millions of times per second + the path of revolution would be wavey. This whirl we might Call Hydrogen If the radi of circle were less we could have Oxygen, + as the Aether particles got more numerous or the circle smaller we might have lead + when it got to the smallest circle in which the Aether particles revolved the would pack the circle so close that an Aether particle would be forced out + we call it Uranium,

Perhaps. there are many orbits filled with these particles orbits of all diameters, all so small that they are set aron

by the microscope – perhaps
several orbits of closely varying
diameters pour each other then
we have Many Kinds of matter

If there were in a certain space
many orbits exactly alike there
would be no trouble to imagine
that they came together as the
speed & diameter is the same
but those orbits which were
not the same the particles
which had not slowed down
enough to make a smaller
orbit could not join them
Which would have a solid Sodium
formed of Millions of orbits
all of practically the same
diameter. with say 2 Aether
particles, Palladium with
3 or 4 + Cerium with
500.

We have Two variables
1st large diameter wheels or
orbits down to the smallest
with only one aether particle

Duplicate varying diameter
orbits with 2 particles
& so on to the maximum number
of particles permissible in each
orbit, when that point is
reached then beyond there
would be disintegration of
the orbit.

In other words solid visible
matter is composed of ether
particles revolving in closed
orbits of varying diameter
& varying particles in the orbits
& diminishing speeds as
the diameter of the orbits
diminish —
All this being brought
about by ether particles
moving in space at 186 000
Miles second, slowing up
by passing thru bodies
Meteors like the sun & by
Collision with other particles
of Ether, throwing the particle
into a circular path which

once done will travel in that current for take Millions of years to make a revolution + at Every revolution within this path meet condition tending to make the orbit smaller + in Countless Aeons of time contract to an orbit so small that it becomes fixed in space as an atom but beyond the limit of our Microscopes in other words what when a great number coalesce together form what to our Eye is solid Matter.

When I mean orbits I mean 1 or more particles moving around a circle in the same plane not a vortex ring a la Kelvin

As solid Matter is highly divisible its likely these orbits have very much less diameter than the smallest Wave length of vibrations or disturbances in the

The Aether of Space,

From all this it is probable that not
Matter is being constantly formed
in space, that it is also being
aggregated together to large bodies

Now for Matter,
Perhaps these microscopic orbits
containing 1 or more ether particles
they in time might have contracted
so that 1 or more might come nearly in
Contact & form a spherical consisting
of 1 particle which is imperceptable
but there could be say 3 particles
finally each contract of this
would form 1 particle rotating on
an axis Then 4 5 6 & so
on, or 2 4 6 8 10 etc Even
numbers or 200 or more

Some of these agregations could
rotate in one direction & some
in another

Those which are the most dense would resist the Ether particles passing between the Ether particles aggregate the most + would be attracted to the Earth the most, as bombarding Velocity Commun then the Earth would be lower than then the particles recieves from space

When we apply energy to this matter, it throws trains of waves due to disturbance of their orbits of matter,

If we fill a jar with a gas at a certain temp and at atmospheric pressure, The molecules will press on the inside of the jar 1 atmos being the same as outside This pressure is due to the ether particles bombarding the gas whorls as the bombardment comes

from every direction the whorls
will move in every direction & put
pressure on the immobile whorls
of the glass vessel
If we now double the whorls
by pumping in more gas +
the whole die at atmospheric
pressure. Then the pressure
in the jar will be one atmosphere
pressure higher because in
this case there will be twice
as many molecules of gas
in the same space & the
Etheric particles will make
twice as many bombardments
doubling the pressure
But the energy is not the
same as to get twice as much
gas in energy was required
this caused a lot of heat waves
to be thrown into the passing
Ether particles which went
out into space and lost
until this group of waves
struck solid matter
If now the outlet to the

air is opened the gas expands + absorbs heat from its surrounding & the device by a proper Engine the would give back power, ~~or~~ energy potential or Kinetic — if Kinetic the whole on compression or Expansion would go out the Ether into space as a train of radient heat waves While the Cooled adjacent air would absorb radient heat trains of waves from space until Conditions were as when started.

The whole of the ether particles of space going in every direction as Vel of light as not a source of Energy under the Conditions we exist in. there is a slight degradation of its Energy of motion when it passed thru the Earth but this cannot be utilized except perhaps in the Case of such

an immense mass as our Sun
Where a loss of velocity even slightly
would tend to prevent the present
temperature of the sun from ever
falling.

The Energy can use as all
in the form of trains of waves
thrown on the Ether bathing
from changes in Solid matter
therefore the heat & light trains of
waves from the sun acting on solid
matter on our Earth is our
only source,

If in a closed Vessel there is a
gas and is cooled down to a
point just before some condensation
into liquid starts, & the wheels
are a considerable distance apart
& the Ether particles from space
pass freely & there is little shielding
of one wheel by the other hence
not much pressing of the wheels
together, If we now put pressure

on the gas the space is diminished & the ether particles press the whorls closer until they coalesce & some condense to a liquid, in this state the pressure on the whorls are very great, then we increase the pressure on portion until its wholly liquid, the whorls are now very close together & held there after losing their heat to cooling mixture,

Now while in liquid state we still further reduce the temperature then the bombardment or pressure of the ether particles forces the liquid to become solid,

Note 1 gram of Li & 1 gram Uranium require the same amount of heat to raise them 1° Cent. in fact all metals same except Be

note

Note. Spectroscope from NaCl flame shows Na flame — Millikan School physics says if a second source of NaCl vapor or a 2nd flame is put in line with the slot that the Sodium line now will be black as the Na flame nearest the slot will absorb it — This is the explanation of dark lines from the sun

Make a test of this arrange the 2 flames so they can be advanced or rather 1 flame fixed before the slit of spectroscope. Then advance the other flame towards the fixed flame as she of this holds good up to actual coalescence of the 2 flames into a single flame

Feby 19 1920

It appears to me as if light vibrating from 400 to 800 million million times that it improbable that the Optic nerve fibres conduct vibrations of this tremendous rapidity.
I think the Effect of light on the Ends of the fibres causes a local action at the tips by fluorescence which is transmitted along the fibres & the image appears in the brain designed for observing as a fluorescent picture. Those who have blind to one color, has an impaired plan which fails to supply phosphorescent Matter fluorescing green or blue etc
We know that the image is retained 1/40 of a second after light is cut off & this makes it certain that the colorado Optical system is based on fluorescence or phosphorescent. I believe the organized beings which live in the Cell, actually observe moving pictures

I think the ear will be found to have an action similar to the perceptions of vision —
If a siren had holes spaced to give say 2000 per second that a group of holes severed off would not be noticed by the Ear —
The action of musical sound is due to the fact that each wave following is an exact replica of it & it requires a number of replica to be received before sound is realized by the brain & after the first replica has been emitted the sound continues to be heard by the brain.
This would certainly take place if the Rods of Corti were actual tuned hairs because it would take many replicas to bring them to full amplitude & they would gradually die down when stimuli ceased.

6 — slope to 3
6" open
3
4
1
330
1"
2
4"
6

406

Theodore Edison

Theodore Edison

(468)

Theodore
Edison.
1906.
NOVEMBER
18.